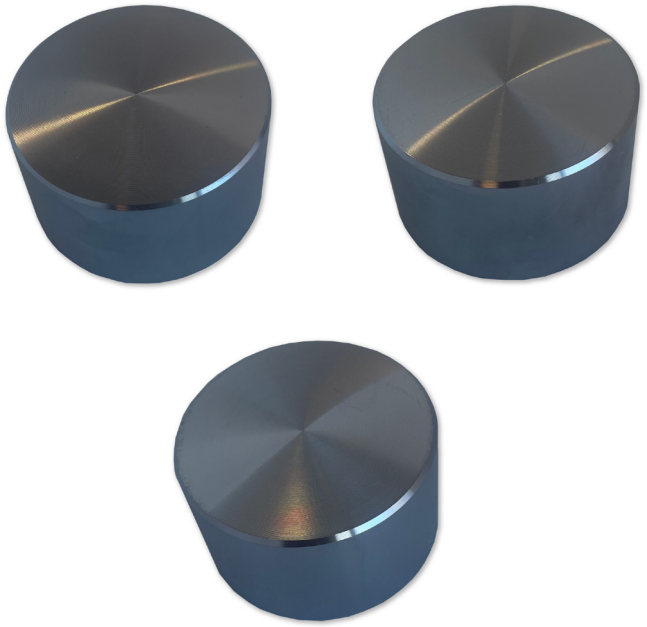
Silcolloy® 2000

The corrosion resistant, high-temperature coating technology.

The Silcolloy® 2000 coating process results in a chemically protective, corrosion resistant, multi-layered barrier of amorphous silicon. Applied by a chemical vapor deposition (CVD) process, the Silcolloy process is the ideal choice for protecting stainless steels, exotic metals, glass, ceramics, and other alloys from temperature degradation, corrosive attack, and process stream contamination.

Silcolloy parts typically exhibit matte grey coloring and minimal variation in appearance depending on coating thickness. All pictured samples (right) meet technical specifications, 580 - 2400 nm.



Applications & Benefits

Semiconductor | Chemical Processing | Energy

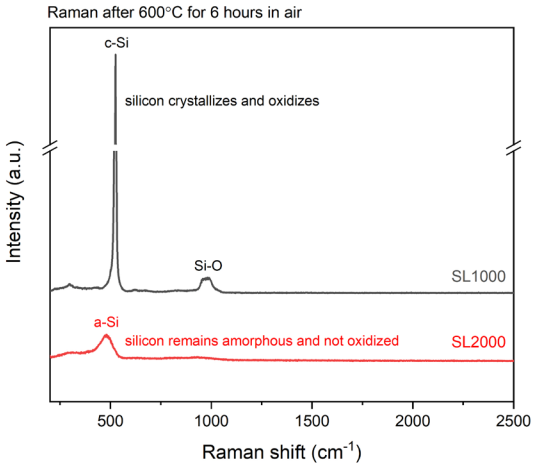
- Increase protection against corrosion and metal ion contamination with a non-reactive, pure barrier.
- Achieve better coating adhesion and excellent performance at high temperatures (800°C.)
- 3D non-line-of sight process coats all complex geometries including high aspect ratios and small orifices.

Silcolloy® 2000 Properties

Coating Composition:	Hydrogenated, amorphous silicon (a-Si:H)
Deposition Process:	Thermal chemical vapor deposition (not-plasma enhanced)
Maximum Temperature:*	800°C
Substrate:	Compatibility: Stainless steel, exotic alloys, ceramics Size: Typical parts up to 80” (203 cm), contact us for larger jobs. Geometry: Any shape, including complex geometries
Typical Thickness:	580 - 2400 nm
Hydrophobicity (contact angle):	≥ 40°
Allowable pH Exposure:	0 - 8

High Temperature Stability

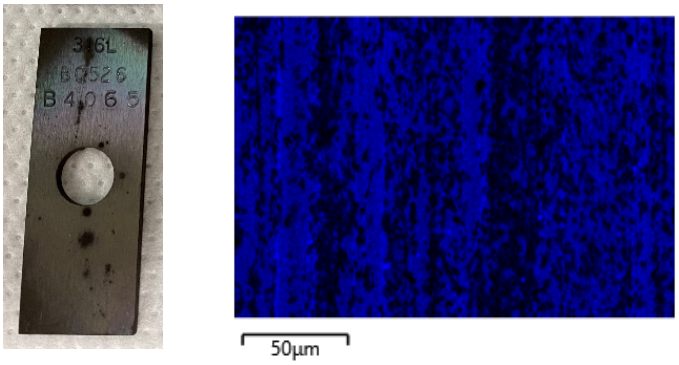
Silcolloy 2000 (SL2000) maintains its chemical composition and performance up to 800°C making it SilcoTek's best high temperature coating.



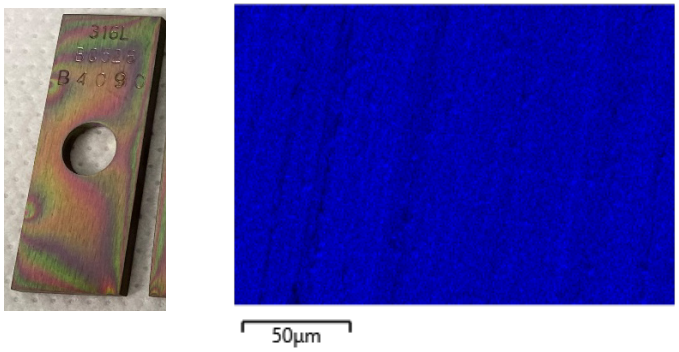
The improved Silcolloy 2000 process allows customers to experience high-temperature stability in their applications. The amorphous silicon layer avoids oxidation at high temperatures to improve and prolong performance.

Coating Endurance at High Temperature

SL1000 after 800°C for 6 hours: silicon EDS map shows incomplete coating coverage

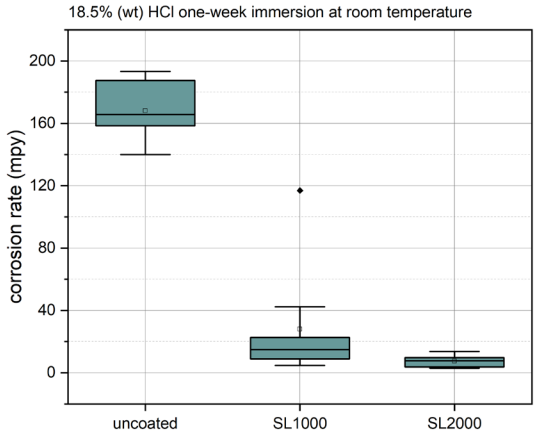


SL2000 after 800°C for 6 hours: silicon EDS map shows complete coating coverage

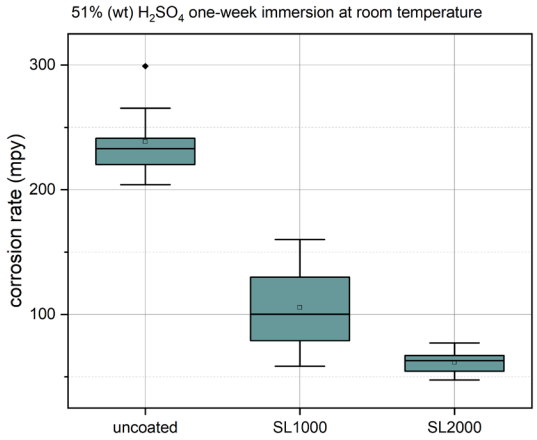


Corrosion Resistance

Aggressive corrosive agents such as sulfuric acid and hydrochloric acid are no match for the excellent protective barrier provided by Silcolloy 2000.

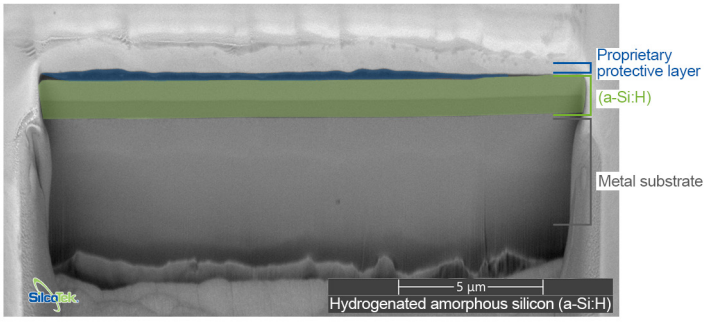


Silcolloy 2000 proves to be the updated standard for corrosion protection, outperforming uncoated stainless steel and its predecessor, Silcolloy 1000.



Uniform Deposition Layer

SEM images taken show the multi-layer hydrogenated amorphous silicon layer acting as a protective barrier for the metal substrate.



*Silcolloy 2000 refers to the Silcolloy 2000 process, which is a thermal chemical vapor deposition that SilcoTek performs on parts to have the properties identified above.